REMARKS

Claims 6-46 were pending at last examination. Claims 6-9, 31-39, and 43-45 have been amended. No claims have been added. No claims were cancelled.

Examiner Interview

Applicant wishes to thank Examiner for the courtesy of a telephone interview on January 11, 2007, in which Applicant and Examiner discussed the difference between a virtual local area network (VLAN) switch and a network machine with multiple virtual routers. No conclusions of patentability were made in this interview.

Claim Rejections – 35 USC 112

Claims 29 and 33 stand rejected under 35 USC 112 second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant respectfully submits that claims 29 and 33, as amended, satisfy the requirements of 35 U.S.C § 112, second paragraph and respectfully requests the withdrawal of the rejection of the claims under § 112.

Rejections under 35 USC §103(a)

Applicant's claims 6-30 have been rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,825,772 issued to Dobbins et al. in view of Cisco et al ("Radius Commands"). Applicant does not admit Dobbins is prior art and reserves the right to swear behind the reference at a later date.

Dobbins discloses virtual local area network (VLAN) switches that switch traffic within a VLAN switch domain (col. 1, lines 60-63). A VLAN is a network domain where users appear to be on the same local area network (LAN) segment, even though may be geographically separated (col. 1, lines 60-63). Each VLAN switch forwards a packet based on the packet's source and destination MAC address (col. 4, lines 32-35) and a

local directory (Fig. 3, col. 9, lines 42-45). The local directory contains switch forwarding information for the multiple domains in one file, for example, VLAN "red", "blue", "default" are listed in the local cache switch table (Fig. 3b, col. 10, lines 27-40). Thus, a single VLAN switch can switch traffic belonging to multiple VLAN domains.

Each switch in the domain maintains a "virtual directory" which contains complete mappings of all known users within the domain (col. 3 lines 60-67 thru col. 4 lines 1-9). The switched domain also allows interconnectivity between legacy networks through the use of "virtual router agents" (col. 6, lines 35-38). The virtual router agents process the route and service advertisements they receive from multi-protocol routers and servers attached to the switch (col. 6, lines 35-40). The switch summarizes and collapses the external networks, routes, and services to only the "best" routes in order to provide a best path to a network or server outside of the switched domain (col. 6, lines 40-46). Dobbins also describes a switch using Address Resolution Protocol (ARP) to resolve physical hardware addresses that are located remotely from the switch. In addition, each of Dobbins' "virtual router agents" process only one protocol. For example, the "virtual router agent" is the secure fast routing service that performs a discovery and resolve service co-located on the VLAN switch (col. 20, lines 62-65). Separate secure fast routing service processes IP and IPX routing announcements (col. 21, lines 16-17).

Nonetheless, these router agents do not forward data for a unique domain, but merely provide reachability information to the switch engine (col. 6, lines 40-42). Furthermore, the "virtual router agent" of Dobbins does not correspond to a unique network domain, but are rather correspond to a particular routing protocol. Dobbins does not disclose any type of virtualized machine.

Radius Commands discloses configuring a router to transmit all outgoing RADIUS commands through a specific router interface (Radius Commands, p.1). For example, Radius Commands describes configuring a router to transmit all outgoing RADIUS commands through a specific router interface (Radius Commands, p.1). As another example, Radius Commands describes setting authentication and encryption keys

for all RADIUS communications between a router and the RADIUS daemon (Radius Commands, p. 2).

Applicant respectfully submits that Dobbins and Radius Commands do not teach or suggest Applicant's claims. In particular, Dobbins discloses a single VLAN switch that switches data within multiple network domains. Dobbins' "virtual router agents" process routing service announcements for a particular routing protocol. Finally, Radius Commands merely discloses configuring a router to transmit all outgoing RADIUS commands through a specific router interface. Therefore, neither Dobbins nor Radius Command teach or suggest one virtual router out of a plurality of virtual routers on a single network device that forwards data within a unique network domain. Nor does either reference disclose multiple virtual routers each having a separate network database that include control information used to forward data within a respective network domain.

For example, claims 6, 8, and 10, as amended, require "... at least one virtual router in the memory, said at least one virtual router including a network interface, wherein the at least one virtual router is associated to an unique network domain, the at least one virtual router forwards data within the unique network domain and the at least one virtual router is one of a plurality of virtual routers in the memory ...".

Furthermore, claim 18, as amended, requires, "... providing a network device including an electronic memory encoded with a first virtual router which includes at least one first network interface and with a second virtual router which includes at least one second network interface, wherein the first virtual router is coupled to a first network domain, and the second virtual router is coupled to a second network domain ... binding the at least one first network interface to the at least one first sub-interface data structure, wherein the first virtual router forwards data within the first network domain through the first network interface; and binding the at least one second network interface to the at least one second sub-interface data structure, wherein the second virtual router forwards data within the second network domain through the second network interface."

Claims 24 and 29, as amended, require "...memory encoded with multiple respective virtual routers, each of said respective virtual routers including a separate respective network database which includes respective control information to forward data within a respective network domain, said each of respective virtual routers respectively each including at least one respective network interface for the respective network domain ...".

Claim 31, as amended, requires "... wherein the at least one virtual bridge is associated to an unique network domain, the at least one virtual bridge forwards data within the unique network domain and the at least one virtual bridge is one of a plurality of virtual bridges in the memory ...".

Claims 33 requires "...a first virtual router comprising a network interface and a first database, to instantiate a second virtual router comprising a network interface and a second database, and to bind with a data structure the first virtual router network interface to the first physical interface, wherein the first virtual router routes packets according to the first database within a first network domain through the first virtual router network interface and the first physical interface, and wherein the second virtual router routes packets according to the second database within a second network domain."

Claim 35 requires "...to instantiate a first virtual router comprising a network interface and a first database, to instantiate a second virtual router comprising a network interface and a second database, and to bind with a data structure the first virtual router network interface to a first virtual circuit, wherein the first virtual router routes packets according to the first database within a first network domain through the first virtual router network interface and the first virtual circuit, and wherein the second virtual router routes packets according to the second database within a second network domain."

Claim 37 requires "...to instantiate a first virtual bridge comprising a network interface and a first database, to instantiate a second virtual bridge comprising a network interface and a second database, and to bind with a data structure the first

virtual bridge network interface to a first virtual circuit, wherein the first virtual bridge switches packets according to the first database within a first network domain through the first virtual bridge network interface and the first virtual circuit, and wherein the second virtual bridge switches packets according to the second database within a second network domain."

Claim 39, as amended, requires "instantiate a plurality of virtual network machines, wherein the plurality of virtual network machines are virtually independent but share a set of physical resources within the single network device, wherein each of the plurality of virtual network machines is one of a virtual router and a virtual bridge, and wherein each of the plurality of virtual network machines belong to a different network domain, receive subscriber records associated with the plurality of subscribers, wherein each of the plurality of subscribers are associated with a virtual circuit on one of the first plurality of ports, wherein each of the first and second plurality of ports is associated with one or more sub-interfaces, and wherein each of the virtual circuits is associated with one of the sub-interfaces associated with the one of the first plurality of ports that the virtual circuit is on, and dynamically bind a set of one or more network interfaces of each of the virtual network machines to a set of one or more of the sub-interfaces, such that each of the virtual circuits is communicatively coupled with one of said plurality of virtual network machines based on the subscriber record of the subscriber associated with that virtual circuit and such that at least some of the virtual network machines are communicatively coupled to one of the second plurality of ports, wherein the bindings are represented with a plurality of data structures."

Claim 47 requires "instantiate a plurality of virtual network machines to forward the plurality of information flows through the single network device, wherein the plurality of virtual network machines are virtually independent but share a set of physical resources within the single network device, wherein each of the plurality of virtual network machines is one of a virtual router and a virtual bridge, wherein the plurality of virtual network machines belong to different network domains with

accounting for different administrative authorities, wherein each of the virtual network machines include one or more network interfaces, and wherein each of the plurality of ports is associated with one or more sub-interface data structures, and

dynamically bind, with a plurality of binding data structures, the network interfaces of each of the virtual network machines to different ones of the sub-interface data structures to couple each of the plurality of information flows to a currently appropriate one of the plurality of virtual network machines based on current authorization of that information flow, and wherein the bindings are dynamic based on a change in the authorization of each of the plurality of information flows."

The above quoted limitations are not described or suggested by Dobbins or Radius Commands. While there are various uses for the invention as claimed, several such uses are discussed in Figure 13, p. 16, lines 13-32; and p. 17, lines 18-23. Thus, while the invention is not limited to the uses discussed in these paragraphs, it should be understood that Dobbin and Radius Commands does not enable these uses and the above quoted limitations do.

For at least these reasons, Applicant respectfully submits that the independent claims are allowable. The Applicant respectfully submits that the dependant claims are allowable for at least the reason that they are dependent on an allowable independent claim.

SUMMARY

Applicant respectfully submits that the rejections have been overcome by the amendments and remarks, and that the Claims as amended are now in condition for allowance. Accordingly, Applicant respectfully requests the rejections be withdrawn and the Claims as amended be allowed.

Invitation for a telephone interview

The Examiner is invited to call the undersigned at 408-720-8300 (Pacific Time) if there remains any issue with allowance of this case.

Charge our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: 1/12, 2007

Eric S. Replogle
Reg. No. 52,161

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025-1026
(408) 720-8300